CLAIMS

1. Antagonists of MCP proteins consisting of mutants of MCP proteins in which the following combinations of residues, numbered on the sequence of human mature MCP-1, are substituted to Alanine, Glycine, Serine, Threonine, Proline, Aspartic acid, Asparagine, Glutamic acid, or Glutamine:

   a) 18 and 19;

   b) 18 and/or 19, together with 58;

   c) 18 and/or 19, together with 66;

   d) 18 and/or 19, together with 58 and 66;

   e) 18 and/or 19, together with one or more of the following: 24, 44, 49, 75.

2. The antagonist of claim 1 wherein residues 18 and 19 are substituted with Alanine.

3. The antagonist of claim 1 or 2 wherein the MCP proteins are human MCP-1, human MCP-2, human MCP-3, human MCP-4, or human Eotaxin.

4. The antagonist of claim 1 or 2 wherein the MCP proteins are proteins having at least 70% of homology with human mature MCP-1, MCP-2, MCP-3, MCP-4, or Eotaxin.

5. Antagonist of MCP proteins selected from:

a) active mutants of the antagonists of MCP proteins of claims from 1 to 5, in which one or more amino acid residues have been added, deleted, or substituted without interfering with the antagonistic activity;

b) peptide mimetics designed on the sequence and/or the structure of polypeptides or peptides of (a);

c) polypeptides or peptides comprising the amino acid sequence of (a) or (b), and an amino acid sequence belonging to a protein sequence other than the corresponding MCP protein;

d) active fractions, precursors, salts, or derivatives of (a), (b), or (c).

6. The MCP antagonist of claim 5, wherein the polypeptide or peptide of (a) has the sequence corresponding to SEQ ID NO: 3.

7. The MCP antagonists of claim 5, wherein the polypeptide or peptide of (c) comprises the amino acid sequence belonging to one or more of these protein sequences: extracellular domains of membrane-bound protein, immunoglobulin constant region, multimerization domains, extracellular proteins, signal peptide-containing proteins, export signal-containing proteins.

8. The MCP antagonists of claim from 5 or 7, wherein said antagonist is in the form of active conjugate or complex with a molecule chosen amongst radioactive labels, biotin, fluorescent labels, cytotoxic agents, drug delivery agents.

9. DNA molecules comprising the DNA sequences coding for the MCP antagonists of claims from 1 to 7, including nucleotide sequences substantially the same.

10. Expression vectors comprising the DNA molecules of claim 9.

11. Host cells transformed with vectors of claim 10.

12. Process of preparation of MCP antagonists of claims from 1 to 8, comprising culturing the transformed cells of claim 11 and collecting the expressed proteins.

13. Purified preparations of MCP antagonists of claims from 1 to 8.

14. Use of MCP antagonists as medicaments.

15. Use of the MCP antagonists of claims from 1 to 8 as active ingredients in pharmaceutical compositions for the treatment or prevention of diseases related to excessive leukocyte migration and activation.

16. The use of claim 15 wherein the disease is an inflammatory disease, an autoimmune disease or an infection.

17. Use of the MCP antagonists of claims from 1 to 8 as active ingredients in pharmaceutical compositions for the treatment or prevention of vascular disorders or cancer.

18. Pharmaceutical composition containing a MCP antagonist of claims from 1 to 8 as active ingredient.

19. Method for the treatment or prevention of diseases related to excessive leukocyte migration and activation, comprising the administration of an effective amount of an MCP antagonist of claims from 1 to 8.

20. The method of claim 19 wherein the disease is an inflammatory disease, an autoimmune disease or an infection.

21. Method for the treatment or prevention of vascular disorders or cancer, comprising the administration of an effective amount of an MCP antagonist of claims from 1 to 8.